Teaching Calculus in a Flipping Way

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Abstract: *"Flipping" a course describes an instructional approach in which the delivery of content is moved outside of class via short videos, while homework, such as problem sets and labs, is shifted into the classroom. In other words, students preview the course material independently (in our case, watch online short videos created by the instructor) and most of the class time is devoted to problems solving individually or in small group. In this session we will present an overview of and justification for flipping mathematics courses as well as share the lessons learned from flipping Calculus I and Calculus II classes. The technologies we used such as screencast video recording software, video publishing software, in class student voting system, and after class online homework system will be discussed. Survey results of students' perceptions for flipping method comparing traditional lecture style teaching method will be presented. In addition, data comparing student performance of the flipped and non-flipped unit will be presented. This session will conclude with a general discussion of the benefits of flipping. This new teaching method can be easily adopted by other science or engineering courses.*

Keywords: flipping, Calculus, video, effective learning